

Skeen. Domenici led the way in winning a congressional markup for the \$48 million observatory.

The observatory's future home is on a ridge in the Magdalena mountains near Socorro, about 130 kilometers south of Albuquerque. Besides the clear skies and roughly 3200-meter-high perch, the site's advantages include that it is near both White Sands and New Mexico Tech, it has room for the observatory to expand, and it has a road and other infrastructure already serving ecological and atmospheric studies and the university's lightning lab (see box).

The MRO will consist of an optical-infrared interferometer with eight to ten 1.4-meter telescopes in a reconfigurable Y-shaped array up to 400 meters long plus a single 2.4-meter telescope. Groundbreaking is scheduled for 20 October.

#### STARS AND SCUDS

The MRO array will have a large number of bigger elements distributed over a wider range of baselines than any other optical interferometer in the works, says Chris Haniff, whose University of Cambridge group is involved in the project. MRO's angular resolution, he adds, "will be a factor of a hundred higher than the Hubble Space Telescope. That means that for any class of astronomical object, you can see more detail."

"One of the exciting things we think we will be able to do is to look at the central engines of active galactic nuclei," says David Westpfahl, project scientist for the MRO interferometer. "All the models have a massive object at the center, such as a black hole, and an accretion disk and polar outflow, but the detailed shape and arrangement of these things are still being worked on. We hope to be able to resolve several of these objects and decide among the models." The MRO interferometer will also be used to deduce the relative rotational axes of stars in clusters, which could shed light on the importance of turbulence in star formation, and to study other aspects of star birth, as well as star aging and planet formation.

Fast slewing is the special feature of MRO's single telescope. It will be able to zip to a particular part of the sky at 10° per second. The slewing was initially incorporated to accommodate the US Army. The MRO offers a good look at target missiles fired from Fort Wingate in western New Mexico, says Tomas C. Chavez, chief of test technology at White Sands. "We could collect phenomenology data during the target's boost and coast phases to help home in on the target with an interceptor." Adds Romero, "This is a match made in heaven. The army wants to use [the telescope] during the day and early morning, we want to use it at night." The 2.4-meter mirror was donated by the air force. Originally intended for classified space-based research, it has hardware added to keep it from sagging in Earth's gravitational field.

Astronomers will take advantage of the fast slewing, too. "One big use of the telescope will be 'alert response to transient astrophysical phenomena,'" says project scientist Eileen Ryan. "An example would be to find the optical counterpart of gamma-ray bursts." For that, the telescope would automatically interrupt other observations when it receives signals from Swift, a satellite NASA is supposed to launch in December. The MRO telescope, Ryan adds, will be bigger and will slew faster than other ground-based telescopes currently hunting for GRBs (see *Physics Today*, July 2002, pages 24 and 25). Mostly, though, the 2.4-meter telescope will be devoted to studying "small Solar system bodies—asteroids, comets, and Kuiper Belt objects," says Ryan. "We want to use the telescope to ask how fast asteroids are

spinning. How big are they? What are their shapes?"

#### POSSIBLE WITH PORK

What with the MRO being funded directly by Congress, the project often gets labeled as pork. Says Romero, "Without this type of funding, we would not be able to build it. But we think this is a facility that funding agencies like NASA and NSF will take the opportunity to fund research at." And, unusual for a federally funded project, New Mexico Tech and its partners will foot the running costs, estimated at \$2 million a year. If all goes as planned, the single telescope would see first light in 2005, and the interferometer could be up and running a couple years later.

### MESSAGES FROM THE PRESIDENT

Messages from the President of the United States were communicated to the Senate by Ms. Evans, one of his secretaries.

### EXECUTIVE MESSAGES REFERRED

As in executive session the PRESIDING OFFICER laid before the Senate messages from the President of the United States submitting sundry nominations which were referred to the appropriate committees.

(The nominations received today are printed at the end of the Senate proceedings.)

### EXECUTIVE AND OTHER COMMUNICATIONS

The following communications were laid before the Senate, together with accompanying papers, reports, and documents, and were referred as indicated:

EC-3008. A communication from the President of the United States, transmitting, pursuant to law, a report that provides the aggregate number, locations, activities, and lengths of assignment for all temporary and permanent U.S. military personnel and U.S. individual civilians retained as contractors involved in the antinarcotics campaign in Colombia, relative to Plan Colombia; to the Committee on Appropriations.

EC-3009. A communication from the Secretary of Defense, transmitting, the report of a retirement; to the Committee on Armed Services.

EC-3010. A communication from the Staff Director, Office of Regulatory and Management Services, Department of Agriculture, transmitting, pursuant to law, the report of a rule entitled "Land Uses; Revenue Producing Visitor Services in Alaska" (RIN0596-AB57) received on June 25, 2003; to the Committee on Agriculture, Nutrition, and Forestry.

EC-3011. A communication from Director, Office of Surface Mining, Department of the Interior, transmitting, pursuant to law, the report of a rule entitled "West Virginia Regulatory Program" (WV-097-FOR) received on June 24, 2003; to the Committee on Energy and Natural Resources.

EC-3012. A communication from the Staff Director, Office of Regulatory and Management Services, Department of Agriculture, transmitting, pursuant to law, a rule entitled "Forest Land Enhancement Program" (RIN0596-AB95) received on June 25, 2003; to the Committee on Agriculture, Nutrition, and Forestry.

EC-3013. A communication from Staff Director, Office of Regulatory and Manage-

ment Services, Department of Agriculture, transmitting, pursuant to law, a rule entitled "Notice, Comment, and Appeal Procedures for National Forest System Projects and Activities" (RIN0596-AB89) received on June 25, 2003; to the Committee on Agriculture, Nutrition, and Forestry.

EC-3014. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "Update of Rev. Proc. 96-30" (Rev. Proc. 2003-48) received on June 24, 2003; to the Committee on Finance.

EC-3015. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "Business Purpose Under Section 355—Fit & Focus—Capital Allocation Purpose" (Rev. Rul. 2003-75) received on June 24, 2003; to the Committee on Finance.

EC-3016. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "Assumption of Partner Liabilities" (RIN1545-BB83) received on June 24, 2003; to the Committee on Finance.

EC-3017. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "2003 Section 43 Inflation Adjustment" (Notice 2003-43) received on June 24, 2003; to the Committee on Finance.

EC-3018. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "2003 Marginal Production Rates" (Notice 2003-44) received on June 24, 2003; to the Committee on Finance.

EC-3019. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "Applicable Federal Rates—July 2003" (Rev. Rul. 2003-71) received on June 24, 2003; to the Committee on Finance.

EC-3020. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "Guidance Regarding Election Under Section 953(d)" (Rev. Proc. 2003-47) received on June 24, 2003; to the Committee on Finance.

EC-3021. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "CRP Cost-Share Payments" (Rev. Rul. 2003-59) received on June 24, 2003; to the Committee on Finance.

EC-3022. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "Compliance Initiative for Nonresident Aliens and Foreign Corporations" (Notice 2003-38) received on June 24, 2003; to the Committee on Finance.

EC-3023. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "Revenue Ruling: Mass Obsolete Ruling" (Rev. Rul. 2003-67) received on June 24, 2003; to the Committee on Finance.

EC-3024. A communication from Chief, Regulations Unit, Internal Revenue Service, Department of the Treasury, transmitting, pursuant to law, the report of a rule entitled "Annual Report Concerning the Pre-Filing Agreement of the Large and Mid-Size Business Division for the Calendar Year 2002" (Ann. 2003-43, 2003-26) received on June 24, 2003; to the Committee on Finance.